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UTP-TESS

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GEORGE MILLER JR MEMORIAL REGIONAL PARK
POINT RICHMOND, CALIFORNIA



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UPT-TESS

Urban Threshold Park — Total Environment
Study Site

George Miller, Jr. Memorial Regional Park
Point Richmond, California.

By:

Arbegast and Newton

Landscape Architecture - Recreation and Park
Planning

1647 Hopkins Street
Berkeley, California

May, 1973

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INTRODUCTION

The study area overlays the southern end of a ridge of hills from Potrero Point in a north-westerly direction to Point San Pablo. This area was originally an island surrounded by marsh prior to the Gold Rush of 1849. Beginning in 1850 the marshes were filled with silt which washed down from the Sacramento River as a result of placer mining. Filling was completed during World War I to accommodate industry, thus joining the Potrero with the mainland.

In 1900 the Santa Fe Railroad entered the area followed by Standard Oil in 1901. Richmond's economy has since been oriented toward industry, and Bay frontage has been designated primarily to serve this use.

During World War II the population of Richmond increased four fold as a result of the settlement of industrial workers employed under military contracts. With the end of the War, the conversion to peace-time industry and commerce was difficult; yet the population remained relatively stable and has since continued to grow.

• • • • •

In March 1972, the East Bay Regional Park District commissioned the firm of Arbegast and Newton to study the proposed George Miller, Jr. Memorial Regional Park site at Point Richmond pursuant to designing a small park within the study area comprising the presently-owned 8½ acres of land lying between the

Santa Fe tracks and Garrard Boulevard together with the related Bay shoreline.

The study was undertaken to (1) collect data pertaining to the existing conditions, uses, and resources within the 650-acre study area; (2) analyze and evaluate this data and make recommendations for acquisition and development of a future large regional park within the study area; and (3) use the study findings as guidance for the initial development of the presently-owned acreage and shoreline lying within the regional park plexus.

The report deals primarily with the potentials of a large-scale regional facility, and in this vein the consultants have proposed what is essentially a new concept — the Urban Threshold Park — Total Environment Study Site (UTP-TESS).

Many of the individual factors and criteria for such a facility have long been established and applied singly or in various limited combinations in other park situations. However, the unique character and location of George Miller, Jr. Memorial Regional Park have given impetus to the formulation of a special set of criteria providing the explicit parameters and planning basis for a special kind of park.

The consultants have worked with staff members of public agencies, conducted research in the field, consulted with experts of various disciplines for specific information, and participated in public hearings throughout the City

of Richmond in order to report the exterior factors and attitudes and the evaluations and recommendations for a logical recreation program, appropriate uses, and the land area required to support them within the framework of the UTP-TESS concept.





**CRITERIA FOR AN URBAN THRESHOLD
PARK - TOTAL ENVIROMENT STUDY SITE**

URBAN THRESHOLD PARK AS A TOTAL-ENVIRONMENT STUDY SITE (UTP-TESS)

Urban Threshold Park (UTP) requires a very special site, easily accessible to urban concentrations, containing natural features comparable to those in more remote areas where personal participation can be identified with projected outdoor experiences.

Total-Environment Study Site (TESS) also requires a very special site containing very specific elements—a multitude of features and activities of both the man-made and natural worlds, where interaction is clearly evident.

The UTP-TESS is situated on rare, eccentric real estate, an identifiable island of certain characteristics, contiguous with a site (or sites) of great variety whose activities and features contrast sharply with those of the island. It is a remnant oversight of the forces which shaped the surroundings.

Rooftops tend to be surrounded by other rooftops; the immediate surrounding of natural peaks tend to be other natural features. The UTP-TESS uniquely requires the unusual "left-over," providing at once the works and developments of man in relation to the natural world resources upon which his developments depend.

Natural (relatively undisturbed) areas, contiguous with urban concentrations, offer the greatest potential, particularly if the urban area includes (immediately adjacent) examples of industry, education, commerce, recreation, and residential neighborhoods, and if the nat-

ural area includes on-site varieties of plants, wildlife, and geological forms.

As the optimum use is regional in scope, so the site must have regional significance; and the administration/management must include regional as well as local entities. Direction and operations demand innovative relationships (parks, schools, commerce and industry) in order to effect the full potential. The National Park Service, working with schools, has recently initiated some limited similar site use (e.g., the NEED and NEEL programs) in historical sites (Fort Point, Canyonlands) through their office of Interpretive Education. This activity has largely been involved with role-playing and reconstruction.

As a public library extends both adult and child horizons from the immediate to the possible, so a UTP-TESS serves the entire community as a living reference resource to the dynamics of living, providing opportunities for the following relationships:

- Person and earth
- Person and earth and ideas
- Person and earth and ideas and impact

As a public library has rooms and books responsive to a wide spectrum of user needs (interests, ages, skills, concerns), so the UTP-TESS must provide the enormous variety of environmental factors and patterns as they interest and affect the user-participant (services, transport, food, shelter, education, recreation).

The living library/laboratory of UTP-TESS ex-

presses the familiar here and now, first-hand. The site also provides for reflection on what was, and projection of what could be.

The close interdependence of the components of our total environment determines the quality of our living, our life styles, our priorities in terms of land and water use, and our interpretations of costs and benefits. *Understanding relies on recognition of these components.* Many of our values, plans and goals are programmed inadvertently, due to a fragmented, sectionalized view of the "world." The UTP-TESS presents these little worlds as part of a total environment — not self-contained little boxes but as parts of a dynamic whole that is continually changing in time and space. *Informed decisions rely upon a valid perspective of the whole.*

The excellence potential of the UTP-TESS is judged by the quantity and variety of opportunities available to the individual and group users. The quality of these opportunities is determined by management and program established within eight major considerations.

1. *Juxtaposition*: Opportunities for comparison and contrast of natural determinants, and man's accommodations and uses. The scale of man to both his biological and self-created habitat.
2. *Elevation (peaks)*: Opportunities for assessment and evaluation of land use, historical evidences, and planning projects provided (if possible) by a 360-degree unimpeded panoramic viewshed.
3. *Contiguous sites*: Opportunities for individ-

ual experience flow through multiple use of sites for recreation/education/being; recognition of changing activity preferences, without the label.

4. *Skills setting*: Opportunities for observing, experimenting, fishing, walking, listening, on a continuing basis, dealing with the environment as a whole; preparing for opportunities in other areas.
5. *Accessibility*: Opportunities for repeated personal visits on an unscheduled interest basis (recreation, leisure time, special inclinations) — growing and living on one's own time.
6. *Laboratory source*: Opportunities for long-range research on non-living and living forms (including man and his activities); reinforcement of concern with man's impact on his life source.
7. *Man-made variety and natural diversity*: Opportunities for personal involvement on many levels; evaluation of productive use and/or mis-use, enhancement and/or non-use of the urban-open land and water complex.
8. *Open space*: Opportunities for the individual to be — to sustain and inspire individual creativity.

Total site use considerations are based upon non-consumptive and/or visual occupancy, and are dependent upon the physical continuity of the designated area, as presently existing.

Public use requires arrangements for safety and sanitation, with access routes designated on

outer perimeter of vantage elevation point, including staging areas.

Multiple use requires provisions for recreation (appropriate to contours and carrying capacity-activity sites); education (trails, tools, activity sites), mutual recreation/education (designations and designs and schedules and direction).

Program requires Teacher, Director, Manager, Leadership skills providing organization, protection of distinctive character of site, on-site informational data, contacts with appropriate elements in viewshed, and with participants in joint administration.





AND THE USE OF RESOURCE ANALYSIS

THE STUDY AREA

General Description:

The study area, also referred to as the site, encompasses approximately 650 acres of land, including that already occupied by industry. It is located in the southwestern portion of the City of Richmond — Point Richmond — with the San Francisco Bay as the south and west boundaries, the Harbor and Santa Fe Channels on the east, and Cutting Boulevard and the Garrard tunnel on the north. The single extant park facility within the area is Keller's Beach.

The study area is unique in that it is composed of a dominant ridge of hills rising abruptly from the Bay to a height of some 350 feet above sea level, capped by Nicholl Knob with an elevation of 371 feet. The western base of the ridge is circumscribed by a band of fill land now predominantly occupied by industry and served by a continuous ribbon of railroad tracks owned by Atchison Topeka & Santa Fe. On the lower reaches of the hills, a number of oil storage tanks, gas tanks and water tanks dot the landscape.

With the exception of a few eucalyptus and pines at the base of the water tanks and the plantings at Keller's Beach, the site is devoid of significant large scale vegetation.

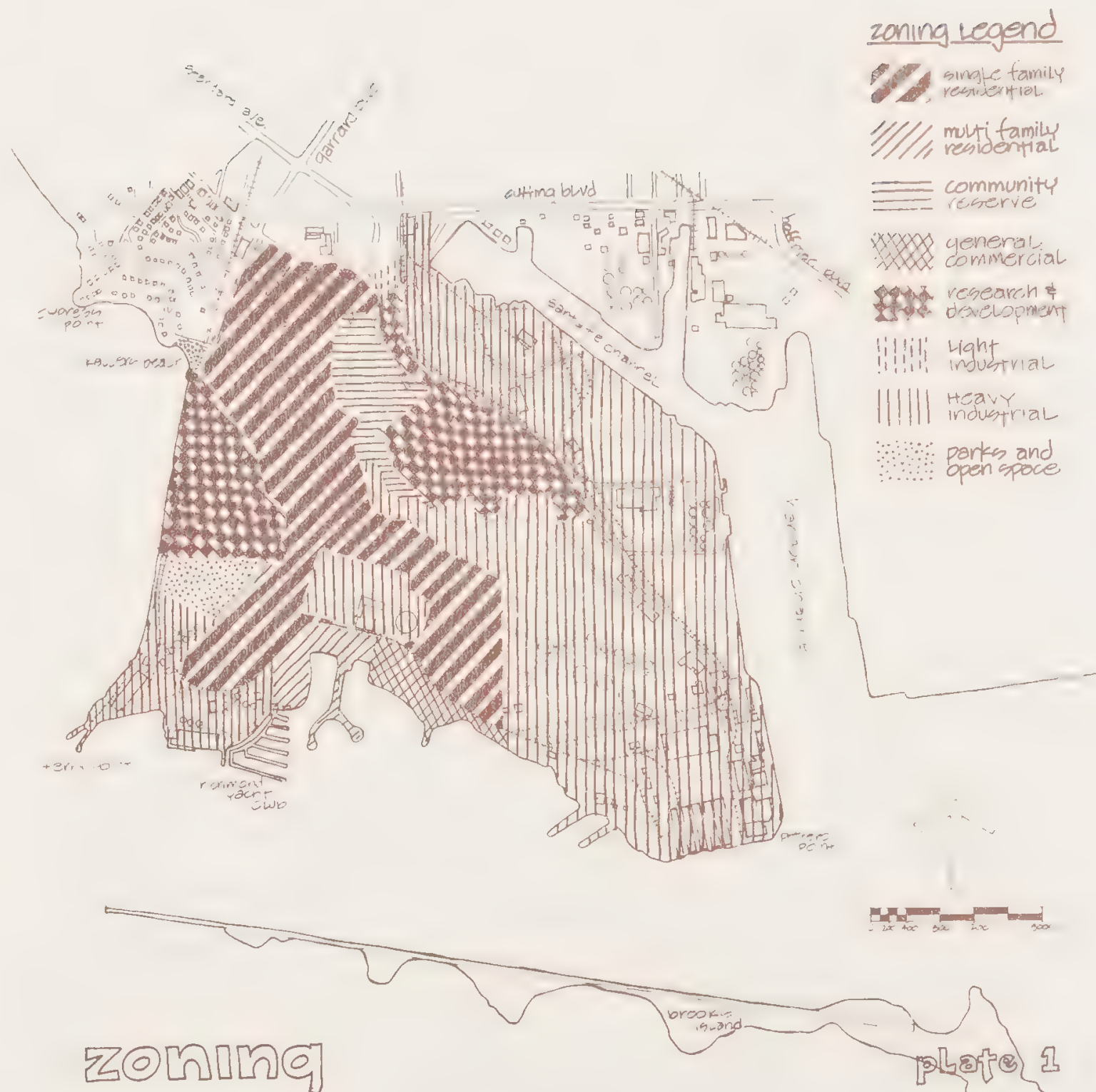
The elevated portions of the site offer locations for observation of a magnificent viewshed or bayscape to the west and south. The site itself is also a viewshed as seen from the vantage points along the Bay.



2. The Richmond Plunge located on Garrard just north of the tunnel has a relatively high use by children and youth groups.
3. Keller's Beach. Adjacent to the project site. Heavily used area throughout the year. This 2-acre park is especially frequented by Blacks who use the picnic and barbecue facilities. The park suffers from its small size and off-shore mudflats.
4. Shoreline area due west of Santa Fe tracks. This activity area is used by local fishermen, particularly Blacks. Perch, bass, and flounder are often caught here.
5. The western slope of the ridge and the Richmond Ramblers motorcycle shack. This area, particularly on week-ends, is characterized by the loud, raucous activities of the dirt scramblers. Motorcycle repair takes place here as well.
6. The rifle range is frequently used by people of all ages, particularly males.
7. A private facility is the Richmond Yacht Club adjacent to Brickyard Cove.

At present there is very little residential development in the study area; there is a residence at the top of Nicholl Knob and one on Garrard Boulevard just south of the rifle range. Adjacent residential areas include the northern slope of Nicholl Knob and the Point Richmond area northwest of the study area.

The Richmond Sewage Treatment Plant is located west of Canal Boulevard in the area of the old quarries. The Richmond Police Force have a small heliport just south of the Sewage Treatment Plant.



Inventory of Parks and Recreation in the Richmond Area:

During the past few years, the Recreation and Park Department of the City of Richmond entered the process of revamping existing parks, acquiring new park sites and, in general, increasing the land area devoted to play space for the population of Richmond. Some of the significant parks now in process or that have been completed are:

- Martin Luther King Park
- John F. Kennedy Park
- Nichol Park
- East Shore/Crescent Park
- Keller's Beach Park
- Shields-Reid Park
- Lucas Park
- Parchester Park
- Valley View/La Moine Park
- Mira Vista Park
- Tiller Park
- Alvarado Park

Even though Richmond owns a 33-mile shoreline, only approximately 16.5 acres of this total area is devoted to parks. Of that 16.5 acres, only slightly over 1,000 feet of shoreline is in waterfront park use. There are a number of small totlots and play areas that are located throughout the City of Richmond. Most of these parks have been created, expanded, or remodeled with the aid of federal funds.

The significant factor is that of all these parks, very few of them are large sites. In order for the residents of Richmond to get into a sizeable park-like atmosphere, with a variety of facilities

or large open spaces, they must leave the city proper. At present, the nearest areas which provide this type of setting are the East Bay Regional Parks — Wildcat Canyon Regional Park and Charles Lee Tilden Regional Park in particular. The only water-oriented parks within the area are Keller's Beach, the Berkeley Marina, and several parks in Marin County, requiring users to cross the San Rafael-Richmond Bridge.

Point Molate Navy Fuel Depot is a 15-acre partially developed park which eventually will provide a much better waterfront park containing a 400-foot stretch of sandy beach. At present the site contains old barracks, huge stacks of oil drums, cyclone fences, and other unsightly elements, which do not make it a very attractive site.

There is one more site that might be considered a recreation area available to the public — the launching ramp just south of Cutting Boulevard by the Santa Fe Channel turning basin. It, however, cannot be considered a park.

In total, all the parks and recreation facilities in the City of Richmond as listed by the Recreation and Park Department as of 1970 is

Potential future parks which may ease the waterfront park situation are the acquisition and development of Point Molate, and the sanitary land fill area. At present none of these are confirmed and are not as accessible as is the study area. [Point Pinole has now been recently acquired by the East Bay Regional Park District.]

In summary, the existing facilities in Richmond are really confined to small inner city parks, playgrounds and playlots with several community centers located within the larger parks. Only three areas along Richmond's shoreline at the present provide for public recreation. It would seem that the total acreage and location of parks within Richmond is inadequate for the population of the city. There appears to be a great need for a large recreational space for the use of the citizenry.

Existing Public Transportation:

As of the date of this report, there is no public transportation available in the study area itself, but there is public transportation nearby, the nearest being the Railroad Avenue bus holding area, which is approximately 1/4 or 1/3 of a mile from the study area. The A.C. Transit has bus service to Railroad Avenue 7 days a week at 20-minute intervals on weekdays and 30-minute intervals on weekends. The #72 M or P bus starting from downtown Oakland runs the full length of San Pablo Avenue and stops at the Railroad Avenue collection point. Any of the feeders that cross San Pablo Avenue and the neighboring cities of Oakland, Emeryville, Berkeley, El Cerrito and Albany can pick up the #72 bus and reach the park area within a maximum of 50 to 55 minutes. Feeders within the Richmond area itself, particularly out at the Parchester Village and Dam Road section of Richmond, connect with the #68 and #69 buses, which also stop at the Railroad Avenue holding area. The average length of time to travel in from Parchester or the Dam Road area to the park site would be approximately 25 to 35 minutes. The #68 and #69

buses are scheduled to arrive at their destination at 20- to 30-minute intervals 7 days a week.

Other public transportation that may be available to the site is the BART system; however, the closest stations to Point Richmond are the Richmond Station between Barrett and MacDonald on 16th Street and the Del Norte Station in El Cerrito. The time of travel from the downtown Oakland terminal to the Richmond Station is 19 minutes, and Oakland to the El Cerrito-Del Norte Station is 16 minutes. People who would want to come from as far away as Concord would have to transfer at the Oakland downtown station. The time required to travel from Concord to Oakland is approximately 22 minutes, making a total of 41 or 42 minutes to Richmond and 38 or 40 minutes to the El Cerrito-Del Norte station, where it is necessary to transfer to a #72 bus and travel to the Railroad Avenue bus holding station.

From the Richmond Station anyone wishing to visit the site would ride a local A.C. Transit feeder bus out MacDonald Avenue, and from the El Cerrito Station, a local feeder bus to San Pablo Avenue.

Now that BART is operative, it is likely that A.C. Transit will alter present bus routes, possibly offering more options to those who wish to visit the site.

Existing Private Transportation:

Major automobile access to the general area would be through the major arterials — mainly

Route 17 or Hoffman Boulevard, Cutting Boulevard, Stanford Avenue, which leads to the San Rafael Bridge, and Garrard Boulevard, which provides access to the western side of San Pablo Ridge through a narrow tunnel. At present, the only direct automobile access to the site is through the Garrard tunnel. The tunnel is quite narrow (two traffic lanes) with a restricted pedestrian walk along the western road edge. Garrard then skirts around the base of the hill and joins the Brickyard Cove road ending adjacent to the P.G. & E. gas tank.

Canal Boulevard provides access to the eastern side of the study area and carries traffic out along the base of the hill as far as the terminal at Potrero Point. Neither of these two roads crosses the southern boundary of the area to join and provide a continuous access around the project area. According to the Department of Public Works, a connecting road known as Ferry Point Road is planned for sometime in the future. Other accesses exist, but these are circuitous routes over steep and winding streets through the Point Richmond residential area.

Garrard Boulevard south of the tunnel entrance is already quite congested, serving as both access and parking area for Keller's Beach, the motorcycle club, shooting range, and fishermen. The entire area is ringed by the Atchison Topeka and Santa Fe Railroad, which serves as carrier of cargo to the various industries along the shoreline, providing spurs and marshalling yards for the delivery and pickup of materiel.

The remaining mode of transportation to the

site is by boat, but this is restricted because of availability of suitable craft, shallow water, and lack of docking facilities.

Regional Geology:

The Potrero-San Pablo hills are a range of about 5½ miles long and vary from 0.3 to 1.3 miles in width. These hills reach a maximum height of 490 feet above sea level, but in the study area they are somewhat lower. The range of hills is a peninsula that is connected to the mainland by a low alluvial fill upon which most of the City of Richmond is built. The hills lie to the west of the City and face San Francisco Bay and have a general trend in a northwesterly and southeasterly direction which is parallel to the general geologic structure of the region. The general structure of the region is dominated by the San Andreas and Hayward Faults, both of which are parallel to the lineation of the Potrero Hills, the former being 14 miles distant to the west and the latter 3½ miles distant to the east. Intermediate between these two major active faults are several others which are roughly parallel and follow along the trend of the various ridges that extend out into the Bay. The Marin, Tiburon, and San Quentin Peninsulas all have a trend parallel to the Potrero-San Pablo Hills and are also bounded by faults. Earthquakes of any great magnitude that might be expected in the Bay region would probably emanate along either the San Andreas or the Hayward Fault; and should earth displacements occur, they would be expected to be found along the surface traces of these two faults, or possibly along one of the intermediate faults mentioned above. These major faults do not cross the study area.

Another structural feature of the region that is worthy of note is the differential fluctuation of the alluvial lands within the Bay Area.



It is a known fact that certain areas within the perimeter of the shoreline around the Bay are sinking while other areas are rising. This movement is very gradual but could be appreciable over a period of years and does affect gravity flows where certain storm sewers have little grade since their flow lines are close to sea level.

The Potrero-San Pablo Hills are comprised almost entirely of the Franciscan formation. This series of sediments and associated igneous rock is quite common in the coast ranges of California. The hills, however, seem to be made up of only beds of sandstones and clay shales. These beds alternate with each other, are relatively thin, and dip quite uniformly along the entire length of the ridge in a general southwesterly direction between 40 and 80 degrees below the horizontal. There are numerous undulations along the lineation of the ridge which are due to differential weathering induced by variations in the character of the exposed sediments and by local breaks across its general structure.

During the recent undulations of the California coast when the Potrero Hills were much lower than at present and stood out of the Bay as a series of islands, the depression on the eastern side became filled with sediments which are known to be several hundred feet deep. With the rise of the coast line, these sediments also became elevated but later were reduced to form a marsh land connecting the Potrero Hills with the mainland. Some of those sediments which flanked the hills were not eroded down to the elevation of the present Bay waters and are now

found along the lower slopes of the Potrero ridge, especially along its eastern slopes. These terrace deposits rest in a nearly horizontal position upon the upturned edges of the bedrock formations that comprise the hills. They are thicker near the base of the hills and thinner at higher elevations where they merge with the residual soils resulting from the normal weathering of the rocks that comprise the crest of the ridge.

On the western slope of the hills these terrace deposits are also found where they extend up to about elevation 175, but they are not quite so extensive along the Bay side of the Potrero Hills. Here, as on the eastern side of the ridge, the terrace deposits are quite prominent in the depressions but less prominent on the ridges where the thinner deposits have been eroded.

Local Geology: (Plate 2)

The site is characterized by igneous rocks of the Franciscan formation. The Franciscan is one of the oldest rock formations in the Bay Area, and consists primarily of marine sandstone, shale, limestone, and chert. Some igneous rocks — basalt, diabase, and peridotite, have also invaded this formation. These igneous rocks are quite hard and massive; outcrops can be found along the hilltops. The hardness of the igneous rocks, and the frailty of the shale and chert would pose construction problems on the hills.

Wildcat Fault, a branch of the Hayward Fault, extends near the study area in a northwesterly direction passing north of Parchester Village and across a portion of Point Pinole. The San

Pablo Fault also extends through the study area in a northwesterly direction from Brooks Island, east of San Pablo Ridge, and under San Pablo Bay. This is an inferred fault; i.e., geologists have assumed that this fault exists by observing the area, but the fault line itself has not been discovered and there is no record of any motion on it. The entire area must be considered a part of a very active earthquake zone.

The area in the vicinity of the sewage disposal plant located on the eastern side of the Potrero Hills is an area that was once a quarry site. Here the terrace sediments as well as a considerable amount of the bedrock have been removed, exposing a steep bluff in the Franciscan formation. Along the face of the hill behind the old housing project area, there are thick deposits of yellow terrace clays extending up the slopes to about elevation 175. Before the quarrying operations were begun in this general area, the hill slope probably extended as far to the east as Richmond Avenue, and these slopes were undoubtedly covered by a thick mantle of terrace material. The flat quarry floor where the sewage plant is located has been excavated to about elevation 25, while the adjoining area where the housing project was located has been excavated to about elevation 75 along the present toe of the hill.

On the west face of the study area in the vicinity to the Tops Chemical Co., extending from the base of the slope is an extensive hydraulic land fill over once-existing marshlands.

Soils: (Plate 2)

For the purpose of this report, the soils found in the study area are composed mainly of two groups: (1) upland soils, and (2) filled tidelands.

The upland soils, which have been formed in place by weathering of the bedrock or have been moved downhill by gravity, tend to be shallow and are found on steep hillsides and ridge tops. Because of the steep slope characteristic of these areas, the threat of erosion by water or gravity is very great when these soils are exposed by clearing the vegetative cover or when they are disturbed by cuts and fills. The above-ground portion of plants reduces the erosive effect of rainfall, and the roots hold the soil in place against its natural tendency to move downhill. Both of these protective functions are lost when the land is laid bare.

The shrink-swell ratio and weight-bearing capacity of the uplands soils is moderate, but the steeper the slope, the less the weight-bearing capacity and the greater the tendency toward failure.

While not a traditional soil classification, filled tidelands are included here because a large portion of the study area consists of such soils. This type of land reclamation has distinct characteristics affecting development. These areas are relatively level, and the erosion hazard is slight, but the qualities of the fill itself and the underlying Bay mud can cause great problems for both construction and plant growth.

Areas classified as filled tidelands comprise roughly 20% of the land in the study area.¹

The behavior of younger Bay mud when filled and developed for urban uses is variable. Differences are due to certain characteristics of the mud itself, the depth and kinds of fill used, and the weight and foundation design of structures placed on it.

¹ An indication of the extent of tidelands before reclamation began is shown in plans, Marshes Circa 1850, in "Basic Data Contribution #9", Preliminary Map of Historic Margins of Marshland, San Francisco Bay, California

From the Franciscan formation, two soil types have developed on the site: (1) Tidal flats, and (2) Los Gatos-Gaviota-Sobrante Association. The former is found just west of the shipping channels and is characterized by poor soil permeability and strong alkalinity. It is Class VII soil, meaning that the land is suitable for range and woodland use with major limitations. In contrast, the soil on the rest of the site is of the Los Gatos-Gaviota-Sobrante Association and occurs on 30-70% slopes. Erosion capacity is high. It is very shallow and unstable soil; maximum soil depth is 36".

This then indicates that the soils on San Pablo Ridge are very fragile and with heavy rainfalls are likely to erode.

Slopes: (Plate 2)

The steepness of slope within the study area has been grouped into four categories indicated by percentage (0-4; 5-14; 15-24; 25-70; 70 and over). The steepest slopes (25-70%) are found along the ridge.

The tendency for erosion to occur varies direct-

ly with the steepness of slope and the amount of vegetative cover. The steeper the slope, the faster water will run over its surface. Fast moving water carries more and larger soil particles in its flow than slow moving water. An exposed 25% slope may be subject to several hundred times the amount of erosion that the same slope would have if it were well vegetated.

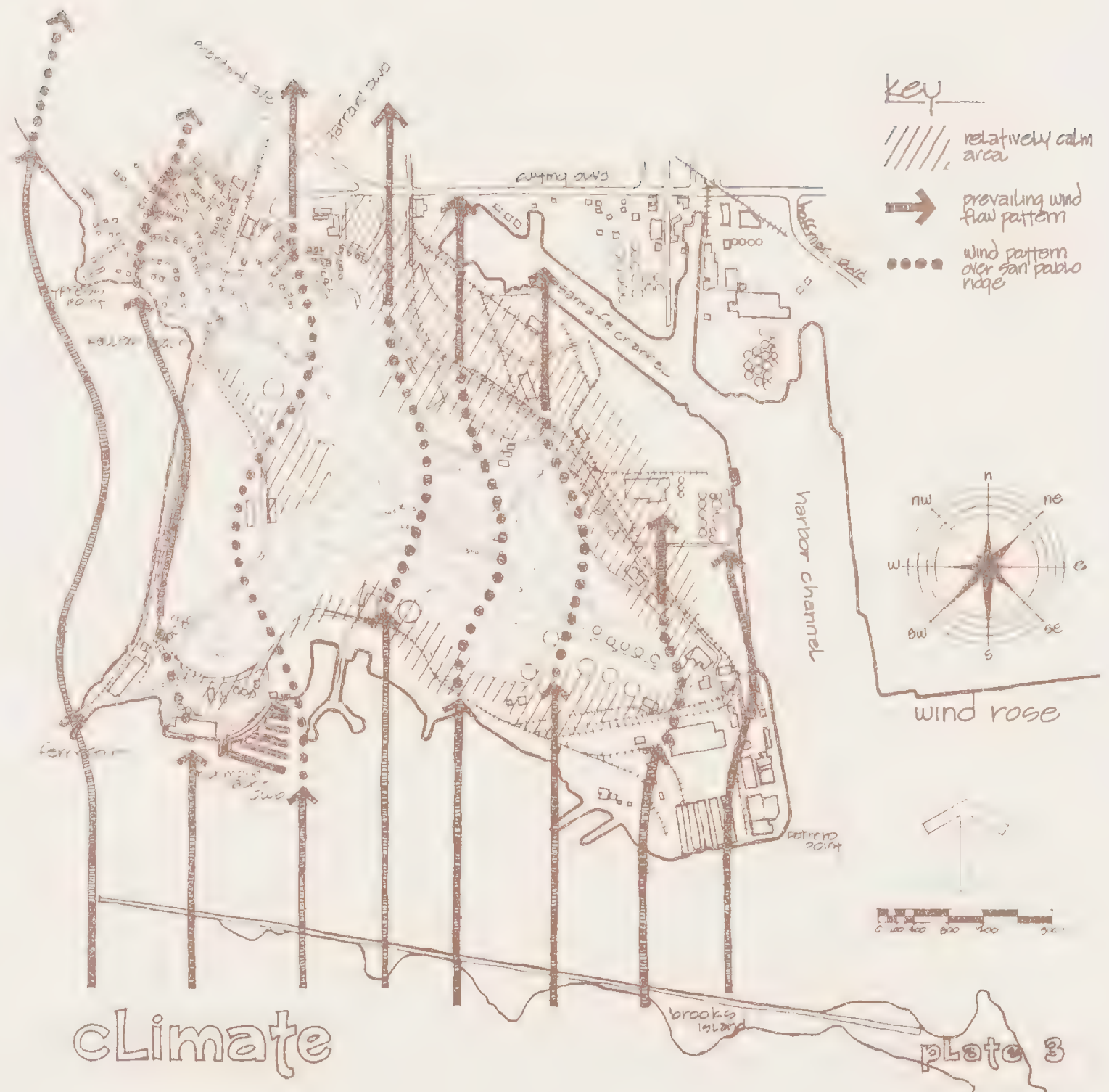
Erosion by gravity occurs constantly on steep slopes, and under normal conditions this is a very slow process. Removal of vegetation and disturbance of ground slope, even by the hoofs of grazing cattle, can lead to increased rates of soil movement. When erosion by gravity occurs suddenly, it is called a land slide or slope failure.

Climate: (Plate 3)

The Bay Area is fortunate in its mild marine type of climate with relatively warm winters and cool summers. There are, however, striking climatic contrasts in various portions of the Bay region. Air pollutants, while not unique to Richmond, are of growing concern since there is an increasing use of the atmosphere for waste disposal. In the case of Richmond, and the study area in particular, the local wind pattern has a very distinctive characteristic.

Typically starting in the early daylight hours as a light to gentle breeze approximately 5 - 9 miles per hour, air flow increases into a fresh to strong breeze 10 - 14 miles per hour by late afternoon. This prevailing wind intensifies during the period from May to August due to the increased difference in air pressures found over the ocean and the Central Valley. The Pacific Ocean has usually low temperatures and high pressure in the summer, while the Central Valley has low pressure and unusually high temperature. The great difference in air pressures between land and sea intensifies the landward movement of air and thus affects the climate of Richmond accordingly.

The prevailing winds at Point Richmond sweep in through the Golden Gate and then turn north, so that they approach the study area predominantly from the south and southwest from April through October. From December through February, the winds prevail from the north and northeast. The winds average from 5 - 10 miles per hour approximately 70% of the time, and between 10 - 20 miles per hour



approximately 25% of the time. The remaining 5% of the time the winds can be termed as calm. On occasion the winds do exceed 20 miles per hour.

The climatic effects of this air mass from the ocean is to produce moderate temperatures that range daily and annually an average of only about 15 degrees. It also brings sea fog and the related low and formless stratus clouds. This fog typically starts developing in the late afternoon, continues through the night, and is burned off by the sun around mid-day. During the seven month April-to-October dry season, fog provides a considerable amount of moisture through a form of precipitation called "fog drip." Due to the cooling effect of summer fog, the warmest months are April and September. In spite of the predominance of fog and low lying stratus clouds, the sun shines on an average of approximately 2/3 of the possible daylight hours.

Temperature:

	<i>Mean High</i>
Winter:	57 degrees F.
Spring:	66 degrees F.
August:	69 degrees F.
September:	74 degrees F.
October:	72 degrees F.

	<i>Mean Low</i>
Winter:	43 degrees F.
April:	49 degrees F.
September:	50 degrees F.
October:	53 degrees F.

Average Annual Rainfall: 22.28 inches
90% falls from October to April, of which
70% falls from December to January.

During the five month November-March wet season, the characteristic southerly wind is less predominant. This season is marked by the increase in frequency and strength of successive passages of low pressure storms which create non-periodic weather changes. A converging wind pattern which flows in a counter clock-wise direction is associated with these lows. Since these storms travel across the continent from west to east, they create a changing wind pattern locally. In spite of the prevalence of wind over the study area, there are periods of calm. The location of these calm areas varies remarkably over the North Richmond area. Calm periods have been reported most frequently in the study area during the wet season, with the highest percentage occurring during the months of November, February, and March.

The most significant wind barrier in the study area is the ridge running between Point San Pablo and Point Potrero. It provides protection on the lee side and to some degree on the windward side from the strong prevailing southerly-southwesterly wind pattern by deflecting and altering its rate of flow. A general deflection pattern diverts the wind while it crosses San Pablo Ridge. On the leeward side of the ridge can be found warmer, calmer climatic conditions in some of the very localized areas. These locations may be especially valued as places for certain types of recreational use. On the windward side the largest somewhat calm area created by this deflection of wind lies just north and slightly east of the Tops Chemical complex. One would expect that certain areas of calm could be created by the

introduction of well placed tree plantations which would then again aid in the deflection of the wind within a specific area.

Bathymetric Study: (Plate 4)

A separate field investigation of tidal current velocities and bathymetric configuration of a portion of San Francisco Bay between Keller's Beach Park and the Santa Fe property at Ferry Point was conducted by Dames and Moore, Consulting Engineers. The bathymetric study extended into the Bay approximately 4,000 to 6,000 feet from shoreline to a water depth of approximately 13 feet below mean lower low water. Depth contours show a very gradual slope from near the shoreline to the seven-foot contour. In this flat area (3 feet in 4,000 feet) no depressions, mounds, or other physical features which would attract or protect fish were found. This gradual slope extends from the toe of the riprap. A steeper slope (3 percent), representing the side of a dredged ship channel, was found in the area mapped, extending from 7 to 13 feet deep. The channel bottom, deeper than 13 feet outside the survey area, comes closer to shore adjacent to Ferry Point.

The average tidal range at Point Richmond is 4.1 feet between ebb and flood tide. The tide currents are quite strong from Ferry Point towards the Standard Oil long wharf and could pose a rather severe threat to swimmers and non-motorized boats, according to Standard Oil Company. The Company also felt boats might go astray and interfere with their shipping activities at the long wharf.

Conclusions drawn from this study are as follows:

1. Tidal currents in the surveyed area are relatively weak with nearshore currents not



likely to move sand along the beach. If beach sand was subject only to tidal currents, it would probably be moved, if at all, southerly past Ferry Point where the along-shore currents are strongest. However, conclusion No. 3 would have more effect on the beach environment.

2. The offshore contours indicate that any sand placed on the shoreline would be subjected to slightly more wave attack on the southerly half of the surveyed frontage than on the northerly half.
3. Prevailing southwesterly winds on surface currents and wave action will have more influence on movement and deposition of flotsam and jetsam. Any sand along the shoreline will be effected by southerly tidal currents only during slack winds and absence of waves. Therefore, the prevailing movement of material would be to the north over any unprotected section of the shoreline. As the existing shoreline is riprapped and the bottom consists of mud, very little material is deposited along the shore except for flotsam and jetsam. Only during the fall, when winds are very light or absent, or perhaps during a strong river flow in the spring runoff or with an infrequent north wind in the early spring or late winter would the stronger southerly tidal currents cause movement of material to the south.
4. Prevailing conditions affecting the shoreline environment would move any imported sand or flotsam and jetsam to the north



View west to Marin hills

end of the surveyed frontage unless shore protective projections were constructed offshore. Such projections could be constructed of rock curving to the north so as to be aesthetically pleasing as well as to permit flotsam and jetsam to pass offshore to the north without being trapped all along the frontage. Some of this debris would find its way to shore regardless of what was done as this frontage tends to be a lee shore where flotsam and jetsam collect. It would tend to collect at the northerly end of the shore because this end is down wind, and the debris would be trapped by the southern promontory of Keller's Beach in a vicinity where alongshore currents that could carry it into the Bay are the weakest in the entire surveyed area. This debris could be collected on-shore and hauled away.

In addition to the information gained from the bathymetric study by Dames and Moore, the Water Quality Control Board indicates that water quality in the study area seems to be improving because increasing amounts of marine life are appearing. However, this is not a confirmed fact. The Board also indicates the water is clean enough for swimming, but not so clean that shellfish taken along the shore are fit for human consumption.

Water temperatures at Point Richmond are as follows:

Low: January, 50.9 degrees F.
High: July, 62.96 degrees F.
Mean Annual: 55.99 Degrees F.

Vegetation: (Plate 5)

Extant vegetation in the study area is predominantly of small scale in comparison with the hills and slopes of the site. Some of the plant material at Keller's Beach is still small. The northwestern edge of the site gives the appearance of a eucalyptus forest because of the dominance of the tall trees (*Eucalyptus globulus*) which are extant directly west of the Garrard tunnel and north of the site.

The dominant trees, native or otherwise, for the general area are the Monterey pine (*Pinus radiata*) and the Blue Gum Eucalyptus (*Eucalyptus globulus*). At the present time young plantings of the Monterey Pine are barely visible to the naked eye from the surrounding roads on the flatlands, and yet these trees which were planted just a few years ago by the Girl Scouts and other youth groups will some day be seen as dominant elements on the hillside giving the site a different character from that which now exists. It might be said that Nicholl Knob will look like a "piney woods" within a ten to twenty year period.

The various slopes and ridge tops are generally devoid of significant vegetation except for grasses and other herbaceous wildflowers. Areas between these ridges or ridge tops are covered with scrub and brush components collectively known as chaparral. The most common plant members of that chaparral complex are the Coyote Bush or Chaparral Broom (*Baccharis pilularis* var. *consanguinea*), Poison Oak (*Rhus diversiloba*), Tree Lupine (*Lupinus arboreus*), Willows (*Salix* spp.), Elderberry (*Sambucus caerulea*), California Buckeye



(*Aesculus californica*), the Coast Live Oak (*Quercus agrifolia*), and the Christmas Berry or Toyon (*Heteromeles arbutifolia*). Other members of that scrub and tree complex found in the draws or water drainage areas and on some of the steep side slopes left undamaged by people and wheeled vehicles are California Coffee Berry (*Rhamnus californica*), California Lilac (*Ceanothus thyrsiflorus*), and Bigleaf Maple (*Acer macrophyllum*).

Wildflowers and native herbaceous plants abound where they are somewhat protected from foot and vehicular traffic. The seasonal aspect of the flowering plants is quite wonderful; some of the wildflowers have been planted by interested persons to beautify the hillsides. The early spring blooms of a number of species of Lupine, California Poppy, Owls Clover, the pale rosy-pink of the Checker Bloom, the orange-red of the Indian Paint Brush and yellow Buttercups are followed later by the Red Valerian, an exotic which has naturalized in the area on some of the steepest, driest slopes, the butter-yellow flowers of the Gum Plant, the bright blue of the Brodiaea, the white of the Yarrow and Morning Glory, the orange sunflower-like blooms of the narrow-leaved Mule Ears which seem to have taken over the barren slopes where the motorcyclists have not recently been, and the yellow Tree Lupine.

A list of the specific wildflowers and grasses existing on the site:

Grasses:

Wild Oats — *Avena fatua*
Soft Chess — *Bromus mollis*

Foxtail Grass — *Bromus rubens*
Cheat Grass — *Bromus tectorum*
Sedge — *Carex sp.*
Nutgrass — *Cyperus sp.*
Salt Grass — *Districhlis spicata*
Wild Rye — *Elymus triticoides*
Foxtail Fescue — *Festuca megalura*
Farmer's Foxtail — *Hordeum leporinum*
Italian Ryegrass — *Lolium multiflorum*
Monerma — *Monerma cylindrica*
Sickle Grass — *Parapholis incurva*
Canary Grass — *Phalaris minor*
Annual Bluegrass — *Poa pratensis*
Rabbitsfoot Grass — *Polypogon monspeliensis*

Herbaceous Plants — there are many, but these are some of the commonest:

Field Mustard — *Brassica campestris*
Black Mustard — *Brassica nigra*
Shepherd's Purse — *Capsella bursa-pastoris*
Italian Thistle — *Carduus pycnocephalus*
Star Thistle — *Centaurea solstitialis*
Bull Thistle — *Cirsium vulgare*
Sweet Fennel — *Foeniculum vulgare*
Smartweed or Knotweed — *Polygonum coccineum*

Wild Radish — *Raphanus sativus*
Curly Dock — *Rumex crispus*
Sow Thistle — *Sanctus oleraceus*
Bracken Fern — *Pteridium aquilinum*
Common Polypody — *Polypodium vulgare californica*

Soap plant — *Chlorogalum pomeridianum*
California Poppy — *Eschscholtzia californica*
Blue-eyed Grass — *Sisyrinchium bellum*
Indian Paint Brush — *Castilleja franciscana*
Checker Bloom — *Sidalcea malvaeflora*

Yarrow — *Achillea millefolium*
Buttercup — *Ranunculus californicus*
Yellow Yarrow — *Eriophyllum confertiflorum*

Chrysopsis sp.

Lomatium sp.

Cow Parsnip — *Heracleum lanatum*

Brodiaea sps. — *Brodiaea capitata*,
B. pulchella, *B. laya*

Ice Plant — *Mesembryanthemum edule*,
M. aequilaterale

Red Valerian — *Centranthus ruber*

Mule's Ears — *Wyethia angustifolia*

Gum Weed — *Grindelia camporum*

Miner's Lettuce — *Montia perfoliata*

Wormwood — *Artemisia douglasiana*

Lupines — *Lupinus albifrons*,
and other species

Wild Cucumber or Manroot —

Marah oreganus and *M. fabaceus*

Yellow Primrose — *Oenothera caespitosa*

Mimulus sp.

Mustang Mint — *Monardella lanceolata*

Buckwheat — *Eriogonum sps.*

Godetia sp.

Bird's foot trefoil

Hill Morning Glory — *Convolvulus subacaulis*

The flat area between Garrard Boulevard and the railroad tracks is a former salt marsh which has become landlocked and is supporting its own kind of vegetation. Grasses, thistles, some Chaparral Broom and Elderberry, as well as Fennel and Blackberry are thriving in this area. Grasses not presently in evidence, but which could be introduced should the proper conditions be created to receive them are Marsh

Grass (*Puccinellia maritima*), Cord Grass (*Spartina foliosa*), and Eel Grass (*Zostera marina*). Although the wind is strong and steady, plantings (indicated by the plants introduced at Keller's Beach) could enhance the area and give it much more protection than now exists.

A row of Chinese Elms on the lee side of the Tops Chemical Company Building indicates that native or exotic plants will thrive if wind resistant or wind tolerant plants are planted on the windward side for protection.

The area on the leeward side of the ridge and along its base is more protected from the wind. It is here that the sewage disposal plant, the quarried area, the war housing planting which still remains, and the training school for the Model Cities Program are located. The plants which have been introduced here are not native to this area. Some originated from exotic backgrounds, and yet have adapted so well to the situation that they could survive through periods of drought. In some cases these plants have naturalized by producing young plants which have extended their range in the area.

The dominant plants on the eastern side of the ridge are various species of Eucalyptus, with the Red or River Gum (*Eucalyptus camaldulensis*) being predominant and growing in the lower portions of the area due to its tolerance to salt and high water table. Here the Monterey Pine and the Chinese Elm (*Ulmus parvifolia*) and the Siberian Elm (*Ulmus pumila*) as well as the Lombardy Poplar (*Populus nigra 'italica'*), and a number of

Acacia species grow with great vigor and no care. These species are especially adaptable to difficult situations (lack of water, high salts, and high water tables).

Some of the other species extant in this area are:

- Rose Ironbark — *Eucalyptus sideroxylon rosea*
- Silver Dollar Gum — *Eucalyptus polyanthemos*
- Compact Blue Gum — *Eucalyptus globulus 'compacta'*
- Black Locust — *Robinia pseudoacacia*
- Evergreen Pear — *Pyrus Kawakamii*
- Fremont Poplar — *Populus fremontii*
- London Plane Tree — *Platanus acerifolia*
- Golden Wattle — *Acacia longifolia*
- Star Acacia — *Acacia verticillata*
- Blackwood Acacia — *Acacia melanoxylon*
- Boat Willow — *Salix caprea*
- Closed-pore Myoporum — *Myoporum laetum*

The areas directly below and around the various large tanks on the south and southeast sides of the hills are relatively devoid of any vegetation except for Ice Plant (*Mesembryanthemum edule* and *M. aequilaterale*) which have been planted to protect and hold the slopes, to keep down other weeds or invading species, and to minimize fire hazards to these tanks.

Many of the extant plants on the site would be suitable in a park, but there are a few other species which should be considered as additions — the California Laurel or Bay tree (*Umbellularia californica*), the Pacific Madrone

(*Arbutus menziesii*), some of the Manzanitas (*Arctostaphylos* spp.) and Ceanothus (*Ceanothus griseus 'horizontalis'*) — as well as some exotic plants which are adaptable to the windy situation of the western slope (the Malaleucas, the Bottlebrushes and Metrosideros).

Wildlife:

Due to the riprap diking required by the railroad track, the shoreline of the study area lacks the variety of habitats (sandy beach, marsh area, accessible mud flats, etc.) that would provide the abundance of natural wildlife that might otherwise be an important educational and recreational resource for East Bay residents. The possible natural biota is further limited by prevailing winds and considerable water turbidity that has direct effect on the important small marine life which provide food resources for larger species.

The following list is not intended to be comprehensive, as a complete survey was not possible in the time available; however, it is certain that the quantity and variety of species would be immediately accelerated could additional habitats be established in the vicinity:

- Barnacles (*Balanus glandula*, *Chthamulus dalli*, and *Balanus improvisus*)
- Periwinkles (*Littorina planaxis*)
- Rock Louse (*Ligia occidentalis*)
- Beach Hoppers (*Orchestordia Californiana*, *O. corniculata*)
- Beach Fleas (*Orchestra traskiana*)
- Bay Crab (*Hemigrapsus oregonensis*)
- California Mussel (*Mytilus californianus*)

Other mollusks expected to be present include *Gemma gemma*, *Mya arenaria*, *Mytilus edulis* and *Protothaca staminea*. At various times the green surf grasses *Zostera marilinia* and the *Enteromorpha ulva*, with some flat bladed kelp of the genus *Laminara*, and also some of the stiff algae of the genera *Pelvitopsis*, *Pelvetia*, and *Fucus* may be seen.

The probable fish off shore include the Northern Anchovy, Jacksmelt, Topsmelt (*Atherinopsis*), Staghorn Sculpin (*Leptocottus armatus*), Striped Bass (*Roccus saxatilis*), Starry Flounder, Rubberlipped Perch, Leopard Shark, Speckled Sanddab (*Citharichthys stigmaeus*), Herring (*Clupea pallasii*), and Cabezon (*Scopaenichthys*).

A number of small segmented mud worms may also be found along the shore including *Noto-mastus*, *Lumbrineris*, *Poldora*, and the *Capitella capitata* (frequently occurring in polluted waters). Some flat worms (*Platyhelminthes*) and ribbon worms (*Nemerlea*) are expected to be present, together with the Ghost Shrimp (*Callinassa californiensis*) and the Rock Snail (*Thais emerginata*).

The avifauna of the area is dependent upon the adjacent former salt marsh and the open hills, though species and abundance are here severely curtailed by constant cycle disturbance with resultant erosion, and the rifle range. Where it is expected to see a number of some species, the list is consequently limited to a single or infrequent observation over a considerable period of time. The species of land birds seen in the general area include

Turkey Vulture, Robin, Starling, Western Meadowlark, Redwing Blackbird, Linnet, American Goldfinch, Brewers Blackbird, White-crowned Sparrow, an occasional California Quail and Ring-necked Pheasant. Marsh Hawks, Sparrow Hawks, Mourning Doves; and the Savannah Sparrow may also infrequently appear in the area. And there is always the possibility the salt marsh area may provide a habitat in which certain rare species may occur. Water and shore birds such as the Willet, Black-crowned Night Heron, Killdeer, and California and Western Gulls may be frequently seen, but appropriate shoreline modifications could make this experience more enjoyable (and more frequently available) as an important part of the total bayshore contact. Other less commonly appearing species include Avocet, Scaup, Ruddy Duck and Common Scoter.

The Salt Marsh Fly, Anise Swallowtail, and Cabbage Butterfly are only a few of the insects that frequent sites within the viewshed.

Although a thorough survey might reveal additional animals, evidence indicates the presence of Western Fence Lizard, Gopher, California Mole, Norway Rat, Gopher Snake and Rattlesnake. With the rapidly disappearing Bay marsh lands, it is also possible that this area may harbor the endangered Vagrant Shrew.

Without the modifications that will provide a restoration of the natural Bay shore elements, little change may be expected in the wildlife status of the study area other than an increased diminution of the numbers and species already

extant. The vast natural history potential of a shoreline area can only be achieved through the provision of those habitat elements that originally gave San Francisco Bay the abundance of life forms enjoyed by all who find richness in water and shore.

Findings:

In order to provide information that could guide the consultants in further determining the long-range role of George Miller, Jr. Memorial Regional Park within the overall East Bay Regional Park complex and to determine how best to use the 8½ acres of land now owned by E.B.R.P.D., it was necessary to request the input of individual citizens of Richmond who will most often use the park. Also important was the input and desires of the various organized and concerned interest groups representing a broad cross section of the entire East Bay. To that end, a series of public hearings was conducted by the E.B.R.P.D. staff and consultants at three different locations during the first five months of 1972.

These hearings, along with the analysis, were designed to aid the E.B.R.P.D. Board in determining the additional amount of land necessary to fulfill these needs, since it was always believed that the 8½ acre site now owned would not adequately fulfill the functions of a Regional Park. The hearings were attended by representatives of various interest groups and public agencies as well as private citizens. A large number of facilities was requested, and a spectrum of functions was suggested for the

park. A partial list of facilities is presented below (not in order of precedence):

- Motorcycle run
- Tennis courts
- Small children's play area
- Fishing pier
- Ball fields
- Restaurant
- Boating facilities
- Observation and lookout points
- Family picnic areas
- Group picnic areas
- Restrooms
- Fish cleaning stations
- Nature study area
- Islands
- Interior parking lots
- Re-creation of a salt water marsh
- Mini-bus system with major parking lot
- Possible funicular to Nichol Knob
- Hiking and biking trails
- A little farm
- Play equipment areas
- Teen center
- Open meadows and free play area for field games, etc.
- Swimming area, possibly a fresh water pond
- Fishing areas
- Tour boat dock or area
- Maintenance and storage yard and facilities
- Golf course
- View overlooks
- Day camp facilities
- Sand beach and walk area along bay
- Train tour around park area
- Multi-use meadows
- Interpretive center

In analyzing the information collected at the public hearings, agreement as to general use requirements began to emerge.

The citizens believe that:

1. More land must be acquired, both flat lands and hills.
2. The park must provide areas for both active and passive recreation, for young and old.
3. The park must provide for nature education.
4. Easy water contact in some form must be provided, with additional parking facilities nearby.
5. Better access to areas within the park must be provided.
6. San Pablo Ridge must be preserved as open space and vegetation restored through re-planting and erosion control.

During the time of this study the E.B.R.P.D. Board engaged the firm of 'Overview' to analyze the entire Regional Park system, and prepare a number of recommendations including functions, facilities, and acquisitions for the future. (The results of this study are now available.)







EVALUATIONS

In the past decade there has been a significant thrust by government and conservation organizations to preserve certain valuable land areas for the benefit of all citizens and to determine what effect uncontrolled land development has upon them. One is reminded of the Federal and State controls being initiated to restrict and reduce environmental pollution of all kinds including water, air, noise and soil.

In the past year we have seen the Federal government set aside very large parcels of government-held land as natural parks and preserves adjacent to or within highly urbanized areas as a means of stemming some urban expansion and providing restful, large open spaces for the use and enjoyment of the citizenry. This trend will continue, and more space will be needed, especially with three-day weekends and four-day work weeks and the initiation of the 12-month school year.

In analyzing conditions and in view of the trend of the population becoming more aware of man's influence on his environment, the efforts of governmental agencies are being applied to control those activities judged harmful to man's well-being. It has become apparent to the consultants that George Miller, Jr. Memorial Regional Park could perform a unique and important function within the total Regional Park complex, as well as that of the State and National Park programs now underway.

George Miller, Jr. Memorial Regional Park *is a regional park within an urban setting, and therefore must perform a different function than most of the existing E.B.R.P.D. parks.* It will serve the population within the immediate

area of Richmond, as well as provide the necessary elements to fulfill the function of a regional facility.

Regional parks must be multifunctional, fulfilling three levels of needs:

1. Recreation.
2. Preservation of open space, natural resources, and endangered areas of regional, historical or geologic significance.
3. Education.

In order to arrive at a realistic land area to accommodate the facilities requested, it was necessary to project an ultimate role the park could best play within the given set of circumstances, not only embodied within the immediate viewshed study area or site itself, but also the role of the park in the immediate surrounding area.

EVALUATION AS A REGIONAL PARK

Based on the land, water, and resource analysis, the consultants recommend that E.B.R.P.D. acquire up to 350 acres of land (including existing holdings) indicated on the general plan in order to fully implement an environmental education program and satisfy the recreational requirements of the citizens as brought forth in the public hearings.

This acquisition would not only incorporate Keller's Beach but would also preserve the San Pablo Ridge area as open space, maintaining the integrity of the Ridge as a significant viewshed within the Richmond area. The plan also suggests a connection of Garrard Boulevard and Canal Street by the completion of Ferry

Point Road for better access and traffic flow. The general plan provides adequate space and use areas for the implementation of both an environmental education and recreational use. Available for effective use would be the immediate surrounding area of an additional 300 acres, thereby providing a total resource of approximately 650 acres (one square mile) including the Park, as well as a commanding viewshed of approximately a 10-mile radius. The activity areas shown on those lands now held by the District could be implemented in the first phases of development and be compatible with future uses programmed for the adjacent areas when acquired.

Recommendations:

- A. That the City of Richmond convert the property on the waterfront next to Santa Fe docks to a site for public access to the water, tour boats, a small fishing pier, and a restaurant.
- B. That the City complete the street shown on the maps as Ferry Point Road linking Garrard Boulevard and Brickyard Cove on the west to Canal Boulevard on the east, improving access and completing circulation completely around the park or project area.
- C. That motorcycles and other wheeled vehicles be prohibited from using the slopes and the ridge and that E.B.R.P.D. and neighboring cities find a more desirable location for this activity in a more acceptable area.

- D. That an active restorative planting program be initiated to reduce soil erosion and re-establish and introduce native plants found in the area, and that the hill tops be kept free of large tree masses.
- E. That in order to protect any beach created by the Park District, off-shore projections be established to protect the sand from wind and/or wave action, and direct the deposition of flotsam and jetsam to convenient locations on shore where they might easily be collected for removal.
- F. That the rifle range be removed. This is not compatible with other facilities in a Regional Park complex of this scale. Not only is it dangerous, but it would require constant supervision.

Considerations:

- 1. The soil conditions and geologic information indicate that there will always be construction problems for any housing development on the hillside. Indications are that it is an unstable area and should be left in its natural state.
- 2. In the design of activity areas, particular attention should be given to wind control, especially in concentrated use areas where protection from the wind means the difference between enjoyment and frustration.
- 3. If recommendations C and D above occur, a noticeable increase in wildlife should take place.
- 4. If the water quality of the Bay continues to improve and if a productive groin is created outboard of the Santa Fe tracks, a

continuing increase in marine life offshore should occur.

- 5. It is quite evident that one of the major problems with the park project is access to the area, especially the western portion of the park, because of the Garrard Boulevard tunnel; there are a number of possible solutions to the problem:
 - a. A mini-bus system could be operated on weekends or holidays from a major parking area established somewhere along Canal Boulevard, thus reducing the need for parking areas within the park site itself.
 - b. A funicular could be constructed up the eastern slope to Nichol Knob to an observation point at some time in the future. From here, park users could hike to the picnic sites or down to the shore, where they then could pick up the mini-bus for the return trip to the parking lot.
 - c. With the cooperation of Santa Fe, a railroad tour could be set up for weekends and special occasions using steam locomotives. Trains could run from the marshalling yards in the Richmond Station completely around the park areas with several stops located in appropriate places. This means of moving park visitors is employed in other recreation areas throughout the country.
- 6. Because of the fragility of the hills and slopes which are the vertically dominant features, it is recommended that the use of the park, at least on the upper reaches, be restricted to hiking and observation. The

hills should not be disturbed for the installation of any type of heavy use area. If the lands are acquired between the Santa Fe track and Garrard Boulevard, they would provide ample space for open meadows and areas for active sporting events such as those requested by the citizens of Richmond in the public hearings.

EVALUATION OF GEORGE MILLER, JR., MEMORIAL REGIONAL PARK AS AN URBAN THRESHOLD PARK – TOTAL ENVIRONMENT STUDY SITE (UTP-TESS)

It is logical that the District expand the highly successful nature education program now being carried on by the staff, into a total environmental education program. George Miller, Jr., Memorial Regional Park can become the vehicle for teaching school children, and the public in general the role of parks, recreation places, conservation, open space, preserves and wilderness areas, and man and his relationship to his environment (and how to use the recreational resources intelligently with respect and concern for the future). Nowhere else in the East Bay is there a site so ideally suited for this type of program. It encompasses all of the elements necessary for teaching environmental education:

The 350-acres of natural landscape (the Potrero-San Pablo Ridge area topped by Nichol Knob at 360 foot elevation) is the base point for the contiguous immediate surrounding 300 acres of man-made features and activities, and for the extended 50 miles of combined man-made and natural elements.

This 650 acres (the last mile), originally an island surrounded by marshes prior to the gold rush, is the rare entity that encompasses the eight major requirements essential to an Urban Threshold Park/Total Environment Study Site.

Identifiable examples of these considerations are listed below, indicative only of the enormous potential:

1. *Juxtaposition*: Demonstrating interaction of man as part of the living world.

Natural elements (variety): Wave and wind action (currents, flow, intensity), humidity, clouds, soils types (particles, fragility), earthquake faults, silt deposits, erosions and stream cuts, water rates, ridge contours, leeward effects, inclines, air and water quality, herbaceous plants (40), grasses (16), flowers, shrubs, trees, obvious seasonal aspects, bluffs, coves, flatlands, marsh, shoreline, mudflats, water table, quarry lake.

Man-made features: Productive/unproductive use of terrain, water, and shoreline, railroad (tracks, holding yards, spurs), marina, yacht basin, breakwater, war-time housing, water treatment plant, oil refinery, wharf, oilers, barges, hydraulic land fill, heliport, warehousing, school yard, commercial and residential areas, water and gas tanks, docks (loading and unloading), channels, fuel depot, boats, piers, exotic plantings.

2. *Elevation*: Essential vantage point for the macro-environment. The only remaining prominent area of undeveloped landscape (luxuriant greens, browns and yellows) vis-

ible from the Bay, the bridges, the islands, and the Albany/Berkeley/Emeryville shore. The viewshed from Nichol Knob includes the San Francisco skyline, Oakland landscape, Richmond tank hill, three Bay bridges, marina developments, dumps, etc. Viewshed also includes islands (Brooks, Red Rock County Point, Angel, Tiburon, Yerba Buena, Treasure), Points (Cypress, Ferry, Isabel, Molate, Pinole, Potrero), Coves (Brickyard, Cozy), hills and mountains (inner coast range, Diablo, Hamilton, Tamalpais, St. Helena).

3. *Contiguous sites*: Visible recreation/education nodes. Facilities (existing or planned) located on flat lands (both sides of ridge) serving also as staging areas for some study activities, picnicking, ball play, kite flying, swimming, fishing, sun bathing, wading, kayaks, sailing, etc. (Note: sites developed in style and scale responsive and proportionate to water, shore, hill slopes and contours.) Conjunction use with Keller's Beach, Yacht Basin and Marina. Hill areas provide kite crest, butterfly trail, walking paths and grass knoll rests.

4. *Skills setting*: Varying learning modules, both traditional and non-traditional, in either/or structure and substance. Emphasis on specific personal experiences and deductions, developing from on-site discoveries.

- a. Language: Seasonal journals, reports, stories, poetry, research, narratives, orals, handbooks, guides.
- b. Mathematics: Graphs, charts, measurements, records, plotting, surveying, mapping, growth patterns directly construct-

ed from on-site data.

- c. Social Studies: Reading the landscape (city planning, schools, streets, services, recreational facilities, industries); historical reconstructions (pre-1900, plus 10-25 year segments, i.e., shipping, oil refining, quarrying, fishing, etc.; impact studies of Santa Fe and Standard Oil)
 - d. Science (biophysical): Plants, wildlife, inventories, data collection, marine, marsh, stream, rock forms, salinity, pollution, algae, plankton, mudflats, habitats, trophic levels, succession, living communities, trigger factors, concentrators, dispensers, catalysts, transporters. (Climate: approximately 15-degree temperature range; average rainfall 22.8).
 - e. Arts/Crafts/Music: Wind, water, bird and animal sounds, photography, sizes, shapes, colors, textures, mosaics, mobiles, sculptures, whistles, prints — all from on-site discovered sources.
 - f. Political Science: Spatial relationships determining regional organizations, regional services; representative bodies and special interests and services.
 - g. Socio-personal Development: Full day and/or overnight use of selected sites, stars, city lights, night migrations, sunrise, sunset, planning, teams, leadership, walks.
5. *Accessibility*: Possibility of a perimeter rail (or shuttle bus) from Canal to Ferry Point, to Brickyard Cove to Garrard to Tunnel, with stops at appropriate staging areas. This would obviate the necessity of present single-tunnel access.

6. *Laboratory Source:* A permanent site can recognize the element (and sequence) of time; special seasonal studies and activities; long-term research on evident ecological concepts (interdependence, wildlife that dies, adapts, moves, or visits); species' succession, plant community changes, growth rates, erosion rates, climatic changes, water movements (Baldwin Channel), tidal ebb and flow (average 4.1 feet); fragile intertidal life, vulnerable mudflat characteristics. A continuum of assignments in time, by class/grade/school; by individual (k-6, 7-9, 10-12, 13-14) especially emphasizing a building of information to which each contributes. It is his library, his hill, his marsh, his mudflat his shore, his Bay.
7. *Man-made Variety and Natural Diversity:* Man's conveniences, activities, services, requirements accommodated using (dependent upon) natural features, interrelationships, necessities, choices. Includes meadows rip-rap, potable water, auto storage, small industry, logistics (rail, ship, truck), chemical compounds, brickyard, recycling. Also cliffs, rocks, sandstone, terraces, outcrops, utility lines, sewage, terminals, techniques, marinas.
8. *Open Space:* Every child, every adult, has the right to be (at least for a time) a non-fragmented part of the earth on which he lives; to find his personal scale, each must stand firmly on his own earth space and look out (Options, alternatives, judgments, decisions).

The non-consumptive use and visual occupancy

of this entire area (hill, shoreline, filled tide-lands, etc.) is dependent upon the contiguity of developments (commercial, industrial, residential, open space, etc.) *as existing*. 1973 then becomes the base line for inventories, past history, future modifications, etc., as man accelerates his participation (e.g., lagoon, native species planting). Non-intrusive uses that might be developed could also include seeding and harvesting of shrimps or oysters (water quality permitting), planted marsh areas, encouraging a blending of the non-discrete habitat types for on-going research, study of the complex interrelationships in swales and draws with intermittent streams, dune mounds with grasses, salt water lagoon, etc.

Additional arrangements to extend the learning potential would include trips, resource personnel, specific data, on-going student participation and training with the particular help of the Northern California Industry-Education Council. Further community resources could be tapped through local special interest groups (Native Plant, Audubon, Minerology) where applicable.

Such a program could involve transportation to the site by bus, or BART, a train ride around the site, witnessing a railroad ferry system in action, and perhaps even a trip to Angel Island by tour boat. Students could compare the micro/macro biology of a salt marsh vs. a fresh water pond, and wind and wave action. They could hike from sea level to over a 300-foot elevation at the top of San Pablo Ridge through natural vegetation and study the ecological relationships of plants and animals of the area. At the top of the ridge,

they could experience the magnificent western views of the bayscape, the Golden Gate entrance to the Bay, and watch the weather-fog patterns; and with a turn of 180 degrees, they could observe industry in action, shipping, and the effects or disadvantages of short-range planning. They could study water and air pollution as well as sewage treatment, salvage and recycling techniques.

The Point Richmond site provides a potential (using the rich peripheral landscape, activities and recreation) for learning unequalled in the entire East Bay. Of the many sites of possible size once available, only this ridge remains. Designation of the remnant as an Urban Threshold Park, incorporating Total-Environmental Study Site use, is of particular value to the East Bay Regional Park District.

SUMMARY

The consultants would like to re-emphasize the fact that the Regional Park District is becoming increasingly involved in education programs at this time, primarily nature training. It seems only fitting that eventually the District should become involved in total environmental education programs in cooperation with Bay Area schools and other concerned independent organizations. Point Richmond, and the project area in particular, could make an ideal study area for school children in terms of environmental conditions.

The implementation of the George Miller, Jr., Memorial Regional Park would necessarily include the joint management agreements of the East Bay Regional Park District, District and

County schools, Chambers of Commerce, and various departments of the City of Richmond (i.e., Port, Planning, Recreation).

Only an informed and caring community, recognizing park values, will preserve and support the Regional Park programs, and will encourage proper use and development of Park lands. Persons with comprehension of the total environment, with practice in identifying options and alternatives, will be the enlightened stewards determining the environmental quality of the entire region.

Implementation of the Urban Threshold Park/ Total-Environment Study Site at Point Richmond is the prudent program of responsible decision makers to insure the enhancement and protection of their investment in open space and total education.



Legend

- * trail head
- ▣ mini-bus and railroader train stop
- ▣ interpretative center
- ▲ camping area ('d' indicates day camp)
- K information kiosk
- Ⓟ parking area
- +++ railroad transportation
- ▬▬▬ mini-bus route
- B boating area
- F fishing area
- S swimming area
- M open meadow
- ESA enviromental education staging area
- PA picnic area
- WF wildflower area
- ✱ view point



general plan

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Informational Sources:

Fortunately there was a great deal of basic information available. Those agencies aiding us by making their work available for use were:

- 1. Planning Department, City of Richmond (701 Coast Line Study)
- 2. Park and Recreation Department, City of Richmond
- 3. Department of Public Works, City of Richmond
- 4. City and County recorders of Richmond office
- 5. A.C. Transit
- 6. BART
- 7. U.S. Weather Bureau, San Francisco
- 8. B.C.D.C.
- 9. H.U.D.
- 10. Bay Area Water Control Board
- 11. Richmond Police Department
- 12. E.B.R.P.D. District (staff)
- 13. U.S. Corps of Engineers (Bay Model)
- 14. Local citizen groups

Consultants:

The following consultants supplied additional information and confirmation by field check, etc.:

- 1. Dames and Moore, Consulting Engineers and Earth Sciences, 550 Sansome Street, San Francisco (Bathymetric Study).
- 2. Dr. Joel Gustofson, 35 Morning Sun Avenue, Mill Valley (Ecologist).
- 3. Mai K. Arbegast, 1641 Hopkins Street, Berkeley (Horticulturist/Plant Ecologist).
- 4. Bissell & Karn, Inc., 2551 Merced Street, San Leandro (Civil Engineers).
- 5. Mary Lee Jefferds, 2932 Pine Avenue, Berkeley, (Environmental Education).

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